CORRELATION OF CLINICAL PATTERNS OF ORAL SQUAMOUS CELL CARCINOMA WITH AGE, SEX, SITE AND HABITS

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DECLARATION

I, **Dr. S. DHALAPATHY** solemnly declare that the dissertation titled "**CORRELATION OF CLINICAL PATTERNS OF ORAL SQUAMOUS CELL CARCINOMA WITH AGE,SEX, SITE AND HABITS**" has been prepared by me at Department of Surgery, Madurai Medical College, Madurai, in partial fulfillment of the regulation for the award of **M.S. (GENERAL SURGERY)** degree examination of The Tamil Nadu Dr. M.G.R. Medical University, Chennai to be held in September 2006.

Place: Madurai

Date:

CERTIFICATE

This is to certify that this dissertation entitled "**CORRELATION OF CLINICAL PATTERNS OF ORAL SQUAMOUS CELL CARCINOMA WITH AGE,SEX, SITE AND HABITS**" is a bonafide record of work done by **DR. S. DHALAPATHY**, under my guidance and supervision in the Department of General Surgery, Madurai Medical College, Madurai during the period of his Postgraduate study for M.S. General Surgery from 2003-2006.

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CONTENTS

INTRODUCTION

Oral cancer is one of the ten most common cancers in the world and shows marked geographical variation. In India, Oral cancers constitute about 30% of all cancers. Each year about 5,00,000 new cases occur annually globally and in India, about 56,000 new cases are reported each years.

Oral cancer ranks number one among all cancers in males and number three in females. The male to female ratio reveals a 2:1 preponderance of male patients. The highest number of cases in both sexes occur in the sixth decade of life, mean age of diagnosis varies from 57.1 years in males to 52.5 years in females.

Oral cancer is an almost entirely preventable disease, being caused by tobacco use, either with or without alcohol. In the west, this is mostly cigarette smoking combined with alcohol abuse. In India, smoking “Pan” [a combination of betel vine leaf, Areca nut, Lime, Catechy and usually tobacco] and reverse smoking are the major etiological factors. Tobacco present in the betel quid is the major carcinogen, although there seems also to be some relationship to the source of slaked lime and the areca nut itself.

The incidence in women appears to be increasing and there is increasing

trend among young patients, mostly male and particularly tongue cancer. Local control of disease at the primary site and the management of neck disease has improved, yet despite this, cure rates and survival rates have not improved during the last 40 years, 5-year survival remaining approximately 55%.

The histologic type referred to is Squamous cell carcinoma as it constitutes 95-99% of all oral cancers and it is one of the main health burdens in India.

AIM AND OBJECTIVE

A study was done among 102 patients of oral Squamous cell carcinoma. The aim and objective of the present study was:

To find a correlation between the clinical patterns of oral Squamous cell carcinoma with age, sex, site and habits.

REVIEW OF SURGICAL ANATOMY AND PATHOPHYSIOLOGY

Oral cavity refers to the lips, mucosal lining of cheeks, upper and lower gingiva, retromolar trigone, floor of mouth, hard palate and anterior two-thirds of tongue. The oral cavity is bounded anteriorly by the lips, laterally by the cheeks, superiorly by the palate, and inferiorly by the floor of the mouth. The oral cavity can be divided into the oral vestibule, or space between the teeth (with alveolar arches) and lips, and the oral cavity proper, beyond the teeth and alveolar processes.

“A mucous membrane lines any body cavity that opens to the outside of the body”. The oral mucous membrane lines the oral cavity. It is made up of two layers: stratified surface epithelium, and the underlying connective tissue. It resembles the skin on the outside of the body, except that it is more delicate in structure and is moist. It is more sturdy in the areas where it is subjected to the most wear. The roof of the mouth and the gingival area has a toughened layer called the keratin layer, and as wear occurs, this is replaced by underlying cells. Its appearance in these areas of greater wear is greyish, rather than red, compared to the floor of the mouth and cheeks where tissue is more protected. The mucosa beneath the tongue has no keratin layer, and this lining mucosa is

so thin that the blood vessels located in the underlying connective tissue can easily be seen giving it a reddish or bluish colour.

THE LIPS

The lips are the two fleshy borders of the mouth (an upper and a lower), which join at the commissure. The upper lip is bounded by the cheeks (laterally) at the nasolabial groove, and by the nose (superiorly). The lower lip is also bounded laterally by the cheeks, and inferiorly by the chin at the labiomental groove. The lips are important in the head and neck examination because changes here may be caused by exposure to the sun which could lead to skin cancer. Vermillion border (or zone) – the red border of the lips, representing a transitional zone where the lips merge into mucous membrane.

THE VESTIBULE AND CHEEKS:

The arch or vault-shaped space between the cheek or lip on one side, and the teeth and gingival of the maxilla or mandible on the other side, is called a vestibule (maxillary or mandibular). It is covered with pinkish labial and deeper coloured alveolar mucosa, and is rich in blood vessels and minor salivary glands. The vestibular fornix is the depth (mandible) or height (maxillae) of the vestibule. The labial frenum is the thin sheet of tissue that attaches the centre of the lip to the mucosa covering the jaw between the central incisors. The buccal frenum, in the area of the premolars loosely attaches the cheek to the mucosa of

the jaw.

The buccal mucosa lining of the inside of the cheeks is shiny, and in spots it is rough. Often there is a horizontal white line running posteriorly on the side at the level where the upper and lower teeth come together. This is called the linea alba buccalis. It may extend from the commissural area anteriorly to the pterygomandibular raphe posteriorly. This area is often irritated by trauma from biting the cheek.

TEETH:

A full complement of adult teeth is 32 (16 upper and 16 lower). There are two dental arches (curved rows of teeth): maxillary or upper and mandibular or lower.

PERIODONTIUM AND GINGIVA:

The periodontium is defined as the supporting tissues of the teeth and includes surrounding alveolar bone, the gingiva, periodontal ligament, and the outer layer of the tooth roots (cementum). The gingiva is that part of the masticatory (keratinized) oral mucous membrane that covers the alveolar process of the jaws and surrounds the cervical portions of the teeth. Therefore, the gingiva is the part of the periodontium that is evaluated in the oral examination.

The gingiva is that part of the masticatory (keratinized) tissue that surrounds the cervical part of teeth. It is firmly attached to the teeth and to their surrounding bones. The gingiva is stippled and coral pink in persons with light pigmentation. The gingiva may be brown or spotted with brown (melanin pigmentation. Marginal gingiva is the collar of tissue that is not attached to the tooth or alveolar bone. It surrounds the root of each tooth from the gingival margin form the collar space or gingival crevice or sulcus. Attached gingiva is a band or zone of gray to light or coral pink of keratinized masticatory mucosa that is firmly bound down to the underlying bone. It is present between the free gingiva and the more movable alveolar mucosa. The amount or height of attached gingiva varies from 3 to 12mm.

Gingival sulcus is not seen visually but can be evaluated with a probe. It is a potential space between the tooth surface and the narrow unattached cervical margin of gingiva called free gingiva. It is lined with the sulcular epithelium.

Alveolar mucosa is movable mucosa, dark pink to red, due to increased vascularity and more delicate nonkeratinized tissue just apical to the mucogingival junction. It is found in three places: maxillary and mandibular facial and mandibular lingual aspects, not on the palate. Alveolar mucosa is

more delicate and less firmly attached to the underlying bone than the attached gingiva and is more displaceable as well, because of the underlying vessels and connective tissue. In health, the gingiva functions in providing support, protection and aesthetics. The gingiva protects underlying tissues because it has keratinized epithelium covering dense connective tissue on the oral aspect. It is resistant to bacterial, chemical, thermal, and mechanical irritant, moreover, the attached gingiva helps prevent the spread of inflammation to deeper periodontal tissues. An imperfect area of protective function of the gingiva is the sulcular lining (epithelium) of the marginal gingiva and junctional epithelium, including the interdental papillae. This lining is not keratinized and is, therefore, permeable to bacterial products. It is a weak barrier to bacterial irritants.

TONGUE:

The tongue is essentially a mass of skeletal muscle mostly covered by mucous membrane, and with a midline fibrous septum separating the two muscular halves. The main parts are the dorsum, tip, inferior surface and roof. The tip is the most mobile part.

The anterior two-thirds of the tongue is covered by mucous membrane into which the underlying muscles are inserted. The surface epithelium is of the stratified Squamous keratinizing variety and is roughened by the presence of many papillae.

Alveolingual sulcus is a valley – shaped space between the tongue and mandibular alveolar bone.

PALATE:

The palate is the roof of the mouth. Between the teeth it lies on a basis of bone, the hard palate. Behind the teeth and hard palate the soft palate projects down. The hard palate is made up of the palatal process of the maxilla and the horizontal plate of the palatine bone.

The mucous membrane of the front of the hard palate is strongly united with the periosteum and the two cannot be stripped apart, forming the mucoperiosteum. The soft palate is the posterior movable part of the roof of the mouth. The vibrating line is the junction between the hard and soft palate.

ARCHES OR PILLARS:

The arches on either side of the uvula are the anterior and posterior palatine pillars or arches that descend from the soft palate. The anterior pillar is also named the glossopalatine arch and the posterior pillar is named the pharyngopalatine arch after the muscles beneath them. They are composed of an aggregation of lymphoid tissue beneath the mucous membrane. The palatine tonsils are located between the anterior and posterior pillars.

FAUCES:

The opening between the free borders of the soft palate, the right and left posterior pillars, and the base of the tongue is called the fauces. It is the posterior boundary of the oral cavity. Behind the soft palate is the oropharynx, which leads to the oesophagus.

SUGRICAL PATHOLOGY

In India, oral cancers form about 30-40% of cancers that occur at all sites. This is high when compared to 5% or less in the United States of America. There is a definite predilection for cancers to arise in the buccal mucosa, tongue and alveolus in tobacco chewers whom tobacco is retained for a period of time. The risk of developing buccal cancer in betel leaf chewers using tobacco is 7.7% and in those using betel leaf alone it is three times more than non-chewers.

AETIOLOGY:

Tobacco use is the most important risk factor. Smoking, Spices (betel nut or pan chewing), Sharp teeth (dentures and trauma), Syphilis, Spirits, Sepsis are the traditional 6 Ss related to the etiopathogenesis of oral cancers. Other Ss include Supari (paan), Submucous fibrosis. Substantial alcohol and cigarette smoking are the major risk factors. Second cancers in the upper respiratory passage are present in about 5% of patients with head and neck cancers at the time of diagnosis (synchronous cancer). Eventually secondary cances occur in 20% of all these patients (metachronous cancer). This development is most frequent in patients who continue to consume alcohol and smoke cigarettes. The multiplicity of neoplasms suggest that the entire

respiratory mucosa may be predisposed to develop malignant tumours, a so-called field defect. These patients may also develop cancers of the lung, pancreas and other organs.

PREMALIGNANT LESIONS:

The association of oral carcinoma and other oral mucosal lesions has been recognized for many years. Often, these lesions are in the form of white plaques ('leucoplakia') or bright –red velvety plaques ('erythroplakia'). However, the majority of oral carcinoma are not preceded or associated with leucoplakia.

DEFINITE RISK OF MALIGNANAT CHANGE:

1. **Leucoplakia -** WHO defines "leucoplakia as any white patch or plaque that cannot be characterized clinically or pathologically as any other disease". Clinically, leucoplakia vary from a small, circumscribed white plaque to an extensive lesion involving wide areas of the oral mucosa. The surface may be smooth or it may be wrinkled, and many lesions are traversed by cracks or fissures. The colour of the lesion may be white, yellowish or grey, with some being homogeneous, whereas others are nodular or speckled on an erythematous base. It has a 5% risk of malignant transformation. Kramer et al. have shown that in southern England leucoplakia of the floor of the mouth and ventral surface of the

tongue has a particularly high incidence of malignant change. This study suggested that this occurrence was due to pooling of soluble carcinogens in the ‘sump’ of the floor of the mouth.

2. **Erythroplakia –** is defined as ‘any lesion of the oral mucosa that presents as bright red velvety plaques that cannot be characterized clinically or pathologically as any other recognizable condition. Such lesions are usually irregular in outline, although clearly demarcated from adjacent normal epithelium. The surface may be nodular. In some cases, erythroplakia coexists with areas of leucoplakia. The incidence of malignant change in erythroplakia is 17-fold higher than in leucoplakia. In every case of erythroplakia there are areas of epithelial dysplasia, carcinoma in situ or invasive carcinoma.

3. **Chronic Hyperplastic Candidiasis -** In chronic hyperplastic candidiasis, dense chalky plaques of keratin are formed, the plaques being thicker and more opaque than in non-candidal leucoplakia. Such lesions are particularly common at the oral commissures, extending onto the adjacent skin of the face.

HIGHER RISK

1. **Oral Submucous Fibrosis :** Oral submucous fibrosis is a progressive disease in which fibrous bands form beneath the oral mucosa. These bands progressively contract so that ultimately mouth opening is severely limited. Tongue movements may also be limited. The condition is almost entirely confined to Asians. Histologically, it is characterized by juxtaepithelial fibrosis with atrophy or hyperplasia of the overlying epithelium. Hypersensitivity to chilli, betel nut and tobacco and vitamin deficiencies have been implicated. Canniff investigated the various enzyme components of the constituents of the 'betel quid' and characterized some alkaloids and collagenases that may be responsible for the connective tissue changes that lead to epithelial atrophy and, ultimately, malignant degeneration. Tissue culture experiments have shown that alkaloids in the betel nut, particularly arecoline, stimulate collagen synthesis and the proliferation of buccal mucosal fibroblasts. Tannins also present in the betel nut stabilize the collagen fibrils and render them resistant to degradation by collagenase.

2. **Syphilitic glossitis :** The syphilitic infection produces an interstitial glossitis with an endarteritis, which results in atrophy of the overlying epithelium. This atrophic epithelium appears to be more vulnerable to

those other irritants that cause oral cancer or oral leucoplakia.

3. **Sideropenic Dysphagia :** The sideropenic Dysphagia leads to epithelial atrophy, which in itself is excessively vulnerable to carcinogenic irritants.

DOUBTFUL LESIONS

1. Oral Lichen Planus
2. Discoid Lupus Erythematosus
3. Dyskeratosis Congenita

CLINICAL PATTERNS

The intra oral distributions reveal that buccal mucosa is the most common site followed by anterior 2/3rd of tongue, lower gum, lip, hard palate, floor of mouth, upper gum. Clinically Squamous cell carcinoma is grossly categorized as papillary. Ulcerative and infiltrative and sometimes a combination of these characteristics.

Papillary or verrucous type : This type of lesion is an exophytic growth and is seen as a papillary mass of varying size with a broad base or a relatively narrow pedicle. In carcinoma, the base tends to be broad and margins of the lesion somewhat indurate. The papillary mass appears pink or red and may have some surface ulceration in larger lesions. The surface texture of the raised mass may be pebbled, verrucous or relatively smooth.

Ulcerative type: This type of lesion appears as a discrete ulcer with a raised indurated margin or as a relatively large area of ulceration with firm indurated tissue at the periphery.

Deeply infiltrating or Schirrhous type: This type of lesion invades deeply into the underlying tissues but has relatively little surface manifestation. The area is firm and hard to palpation. There may be some surface or tissue

proliferation. This type of oral carcinoma is fortunately uncommon.

The present study is undertaken to find a correlation of clinical patterns of Squamous cell carcinoma with factors like age, sex, site and habits.

REVIEW OF LITERATURE

The following literatures has been reviewed regarding the clinical appearance of oral cancer such as papillary, ulcerative and deeply infiltrating with emphasis on age, sex, site and habits.

Clinical Appearance:

Wahi et al (1965) reported that the gross appearance of oral cavity tumor when the patient was first examined was either ulcerative or diffuse infiltrative type. The exophytic type of growth was seen in a very few patients.

McCarthy and Shyklar grossly categorized clinical appearance of Squamous cell carcinoma as papillary, ulcerative and deeply infiltrating type.

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Khanna (1985): reports three types of growth of oral cancer (i) proliferative (ii) ulcerative and (iii) indurated. Maximum cases were reported to have ulcerative growth and indurated growth was present in carcinoma tongue.

Mehta (1990): Described the clinical appearance of oral cancer as exophytic, ulcerative / infiltrative.

Exophytic cancer: The term “exophytic’; is used to describe an outwardly growing tumor. They metastasize less frequently than the ulcerative type.

Ulcerative cancer: In contrast to exophytic lesions, ulcerative cancers burrow deep into the mucosa with a breach in the surface. Sometimes the ulceration may have a deceptively innocuous appearance. Rolled borders (Everted margins) and induration on palpation, however are indicative of a hard tumor mass deep within the tissue. Ulcerative cancers metastasize more

frequently than exophytic cancers.

Babu (2001)[1] grossly categorized Squamous cell carcinoma clinically as ulcerative and infiltrative or proliferative and sometimes having a combination of these characteristics.

AGE

Wahi et al (1965) reported that peak incidence of occurrence of oral cancer in both males and females was between 50 to54 years and very few cases seen below 30 years of age.

Tan (1969) found that about 80% of cases of oral cancer occur in between 40-80 years, 11.8% below 40 years and 8.4% above 80 years. The peak incidence of disease was 60-69 years in males and seventh and eighth decade in case of females.

Samuel et al (1969) reported that oral cancer occurred mostly in the age group of 40-49 years with the average age being 45.2 years.

Tripathi et al (1976) found in their study that maximum cases of oral cancer occurred in the age group of 51-60 years.

Sengupta (1979) while studying Squamous cell carcinoma of the ear, nose, throat and oral cavity found that 61% cases were between 41-60 years.

Khanna (1985) reported an average age of 50 years for oral cancer.

Sankaranarayanan (1989) reports that in India less that 1.3% of oral cancers occur in less than 30 years of age.

Sankarnarayanan (1990) found that mean age of diagnosis of oral cancer in India was 57.1 years for males and 58.6 years for females. The peak age frequency distribution was seen in the sixth decade for men and the seventh decade for women.

Mehta (1990) reported that the highest number of cases of oral cancer occur in the sixth decade of life in both sexes.

Gajalakshmi (1998) described the mean age at diagnosis of oral cavity cancers for males as 54.8 years, older than female by 2.3 years.

Ishiyama et al (1994) reported that the incidence of occurrence of papillary squamous neoplasms of head and neck was highest in the age group of 50-59 years and 60-69 years.

SEX

Khanolkar (1944) found that males are more affected by oral cancer than females.

Jussawalla (1968) found a 2.6:1 sex ratio in favour of males for the cancers of buccal cavity and pharynx.

Tan (1969) reports oral cancer as a disease of men,. The male to female ratio being 3.7:1.

Samue et al (1969) showed that oral carcinoma is more common in males, male female ratios being 3.8:1.

Tripathi et al (1976) found in their study that oral cancer is predominant in males, male: female ratio being 4.5:1.

Tambali B.L. (1977) concluded that 73.6% of males are affected by cancers of oral cavity as against 26.4% females.

Sengupta P. (1979) reported that in India oral and pharyngeal cancer is more common in males. male: female ratio being 6.1:1. 10.9:1 male to female ratio of oral cancer was reported by **Khanna (1985)**

Gupta et al (1989) observed that oral cancer was diagnosed more among men, male: female ratio being 1.7:1.

Male: female ratio of 1.81:2 was described by **Sankarnarayanan (1990)**

McGaw (1996) state that oral cancer is the sixth most common cancer in men and 12th most common cancer in women.

Gajalakshmi (1998) reported that in cancers of oral cavity there was a male female ratio 1:0.57, 1:0.40, 1:0.92, 1:0.13 and 1:0.87 in cancers of lip, tongue, gum, floor of mouth and cheek respectively.

Ishiyama et al (1994) fount that, out of 52 patients identified with papillary Squamous neoplasms in his study, 46% (24) were females and 54% (28) were males.

SITE

Khanolkar (1994) found that, tongue (especially base of tongue) is the most common site affected by oral cancer in males followed by tonsillar area and then buccal mucosa. However buccal mucosa followed by tongue were the most common sites involved by oral cancer in females.

Hirayama (1964) found sites affected by oral cancer among tobacco chewers (in order) were buccal mucosa, lip, anterior 2/3rd of tongue.

According to **Wahi et al (1965)** buccal mucosa was the most common site involved by oral cancer (52.3%). This was followed by anterior 2/3rd tongue (21.2%), gingiva (10.2%) posterior 1/3rd tongue (5.7%) hard palate (5.5%), lips (2.6%), tonsils (2.1%) and soft palate (0.4%)

The high frequency of occurrence of buccal mucosa cancer in south India studied was by **Singh (1966).** He found that left buccal mucosa cancer predilection was more (64%) as compared to right buccal mucosa cancer (36%). Also the mid inferior buccal mucosa (including the inferior buccoginival sulcus) had a striking frequency of involvement (42%).

According to **Reddy (1968)** the cancers of buccal mucosa, gums, and lips were more common in females as against cancers of mouth, pharynx and larynx in males.

Samuel et al (1969) reports that cancer of buccal mucosa is the most common (50.16%) followed by anterior 2/3rd tongue (31.11%) gums (7.62%) palate (4.44%), lower lip (3.02%) posterior 1/3rd tongue (1.75%), upper lip (1.11%), floor of mouth (0.79%).

Tripathi et al (1976) found that buccal mucosa was the most common site involved followed by lower alveolus, anterior 2/3rd tongue, post 1/3rd tongue, upper alveolus, palate and floor of mouth.

Nayak et al (1977) reported that of all the oral cancers the carcinoma of buccal mucosa showed higher incidence.

Khanna (1985) reported lower alveolus to be the most common site for oral cancer followed by buccal mucosa and anterior 2/3rd of tongue equally, then lower lip, upper alveolus and floor of mouth.

Sankarnarayanan (1989) observed that more than 50% of oral cancers in India occur in the buccal mucosa in contrast to less than 5% in many western countries.

Sankarnarayanan (1990) revealed buccal mucosa to be the most common site of oral cancer (50% of all cancer within the oral cavity), followed by the anterior 2/3rd of tongue (24%), lower gum (12.5%), lip (4%) hard palate (3.2%), floor of mouth (3%) and the upper gum (2.8%).

McGaw (1996) stated that while most cases of intraoral cancers occur in the cancer prone areas comprising of floor of mouth, the posterolateral border and ventral surface of tongue and retromolar region; no intraoral site is immune.

Kulkarni et al (1996) concluded that oral cavity, tongue and pharynx are the most common sites of malignancy in males, though less common in

females.

Rao, Ganesh (1998) estimated the incidence of cancer in India and concluded that tongue cancer is the fourth leading site among males but does not figure among the leading sites in females.

Gajalaksmi (1998) reported that among oral cavity cancers, cancers of lip, tongue, gum, floor of mouth and cheek constitutes 3.6%, 20.3%, 18.3%, 5.2% and 52.7% respectively implying that most common site of involvement is cheek.

Yeole (1999) concluded from his study that tongue was the fourth most commonly affected site by oral cancer in males and eighth most common site in females.

Ishiyama A et al (1994) from his study on papillary Squamous neoplasms of head and neck concluded that the most common site affected was alveolar ridge (20 patients) followed by buccal mucosa (13patients), floor of mouth or ventral tongue (11 patients), glottis (8 patients), retromolar trigone (7patients), lateral tongue (4patients), palate (3patients), supraglottis (2 patients) and tonsil (1 patient).

HABIT AND ORAL CANCER

Orr (1933) concluded that tobacco chewing with betel leaf and areca nut is one of the main etiological factor causing epitheliomas of the mouth in South India.

The betel quid (paan) has been described by various researches. It consists of dried tobacco, slices of dried or fresh areca nut in a fresh green betel leaf that is smeared with lime (Calcium Hydroxide)

Hirayamat (1964) arrived at the fact that with the increase in frequency of chewing, the risk of developing oral cancer went steadily up ("dose - effect relationship). The risk was higher among chain chewers, prolonged chewers and chewers who started that habit at an early age. Smoking factor should be considered as a minor one affecting oral cancer independently of the tobacco chewing factor. Also, alcohol drinking factor is of only minor importance, if any, in the etiology of oral cancer.

Singh (1966) summarized that tobacco is probably the principal, but not the sole carcinogen in the development of betel quid cancer of the buccal mucosa.

Shedd et al (1968) commented that there is strong evidence available from India that use of local agents such as betel nut and tobacco can play an

important role in the production of cancer of the buccal mucosa.

Jussawalla et al (1968) believed that the high incidence of buccal cavity and pharyngeal cancer throughout India is believed to be associated with the habit of chewing betel nut with tobacco, like other ingredients.

According to Samuel (1969) Pann without tobacco is comparatively less harmful but the combination of pann with tobacco, if used for a sufficiently long duration (16-20 years) acts as a carcinogenic agent. Betel nut alone is responsible for a much lesser carcinogenic effect than when used in combination with lime or tobacco. No relationship was found between smoking and oral carcinoma except for the lip.

Jussawalla (1971) conducted a study that indicated tobacco chewing to be associated with cancers of oral cavity and smoking to oro-pharyngeal and laryngeal cancers. Also the risk of developing oral cancer was found to be 4.8 times higher than in non chewers. Those who chew betel quid without tobacco show 3 times greater risk of developing cancer than the non chewers.

Smith (1973) concluded that pipe smoking was associated with intra oral cancer. This was supported by **Levi et al (1950)** and **Wynder et al (1957).** Cigarette smoking was also associated with oral cancer.

Khanna (1985) observed that the incidence of oral cancer in India is

closely related to tobacco chewing, tobacco smoking being the next carcinogenic agent.

Sankarnarayan (1989) identified betel quid chewing incorporating tobacco, tobacco smoking and alcohol abuse as major risk factors for oral cancer in the older population.

Gupta et al (1989) found that oral cancer was seen more often among chewers compared to smokers. This is supported by **Shah (1989)** who attributed 90% of oral cancers in south East Asia to tobacco chewing and smoking habits. There is increased risk of developing oral cancer in people who chew tobacco compared to those who don't and the risk increases with increased use of tobacco.

Sankarnarayanan (1990) concluded that investigations in India reveal that tobacco smoking and chewing act synergistically in oral carcinogenesis and that persons with mixed habits form a substantially high risk population. Smoking is practised mostly in the form of cigarettes, beedies or both and the most common form of drinking among lower socio-economic strata involves two forms of locally brewed liquors in pots; arrack and toddy. **Keller (1967)** demonstrated cancer of tongue and floor of mouth related to heavy smoking.

Tobacco chewing habits like chewing of betel quid has been linked with

greater frequency of oral cancer **(Clemmesen 1965).**

Malaowalla et al (1976) confirmed from the findings of his study that smoking and smoking combined with "paan" usage increased the risk of developing mouth cancer and would be considered co-factors in carcinogenesis.

Chronic tobacco chewing has been identified as important aetiological factors for oral cancer by **Tripathi et al (1976)**.

According to **Nayak et al (1977)** the incidence of oral cavity malignancies showed highest occurrence, which is due to the habit of chewing tobacco, betel leaf, betel nut and slaked lime.

Vaish RP, Jene DC (1984) concluded from their study that there were statistically significant differences in prevalence of oral cancer among habiters and non habiters.

Thomas A.S (1984) after an analysis of a survey on oral cancer in India concluded that highest risk of oral cancer occurs in people who use tobacco by incorporating it in betel quid and also by smoking.

Rao DM, Desai (1998) found that the type of tobacco habit, to some extent affects the location of cancer in tongue. Beedi smoking was found to be a significant risk factor for base of tongue and tobacco chewing for anterior

tongue. Alcohol was shown to be associated with anterior tongue cancer but not with base of tongue cancer.

Vora et al (2000) concluded from his study that the risk of Squamous cell carcinoma developing in the oral cavity is increased by the combining habits of alcohol drinking, tobacco smoking and paan use. It has been calculated that a non drinking heavy smoker (smoking more than twenty per day) may have a two-to – four fold increased risk of developing Squamous cell carcinoma than a non smoker, whereas a heavy smoker and drinker (Drinking over 21 units a week) has six to fifteen times increased risk.

Babu (2001) reported that oral cancer had strong association with betel – tobacco quid chewing and beedi smoking. Cigarette smoking was associated with laryngopharyngeal cancer and smoking with tobacco chewing had an additive effect. Also alcohol and tobacco augment each other ill effects.

Ishiyama A et al (1994) reported that in his study on papillary Squamous neoplasms of head and neck, 52% patients had history of tobacco use whereas only 8 patients acknowledged the use of alcohol.

MATERIAL AND METHODS

SAMPLE:

The present study included 102 patients of oral cancer. The patients visiting Department of General surgery and surgical Oncology in Government Rajaji Hospital, Madurai were included in the study.

CRITERIA:

Following criteria were followed for selection of the patients.

INCLUSION CRITEIRA:

1. Histologically proven cases of Squamous cell carcinoma were included.
2. Only patients more than 35 years of age were included in the study.
3. Lesions that were clinically visible in oral cavity were included in the study
4. Only patients with habits, were included in the study.

EXCLUSION CRITEIRA:

1. Cases that were not proved to be Squamous cell carcinoma histologically were excluded.
2. Patients less than 35 years were not included.
3. Patients without habits were excluded

4. Lesions that were not clinically visible in oral cavity were excluded.
5. Those patients who had taken treatment of oral cancer were excluded.

PRINCIPLES OF STUDY:

After selection of patients, further information was recorded with a specialized proforma.

PROFORMA

1. Name **:** Name of the patient was recorded.

2. Age **:** Patients above 35 years of age were included and the age recorded.

3. Sex **:** Gender of patient was recorded.

4. Occupation **:** Occupation of the patient was recorded

5. Address **:** Address of the patient was recorded

6. Diet **:** Veg / Mixed.

7. Habits:

Type	**Duration**	**Frequency**
a. smoking tobacco		
b. Chewing tobacco		
c. Alcohol		
d. Quid chewing		

CLINICAL EXAMINATION:

Examination was carried under good light conditions with mouth mirrors and tongue depressors) (to check base of tongue) by a single examiner to reduce inter examiner variability.

SITE:

Oral cavity was divided into following areas:-

a. Buccal mucosa	(Right and left)
b. Alveolar ridge	(upper and lower)
c. Tongue	(Anterior 2/3rd of tongue)
d. Floor of mouth	
e. Hard palate	
f. Commissures	(Right and left)
g. Retromolar trigone.	
h. Oropharynx	it includes – base of tongue.
	- Soft palate.

These sites were examined for any clinically suspicious malignancies depending on their clinical presentations and grouped broadly as:

a. Ulcerative
b. Papillary
c. Deeply Infiltrative

INVESTIGATIONS:

a. **Biopsy:** Biopsy was done to confirm the clinically suspicious lesions for malignancy.

b. **Radiographic evaluation:** Using intra oral or extra oral radiographs, signs of bony involvement were assessed.

Analysis: The present study consisted of 102 patients diagnosed with oral Squamous cell carcinoma. Subjects were selected on the basis of inclusion and exclusion criteria. The data available from the study was tabulated into tables and analyzed statistically to assess the correlation between patterns of oral Squamous cell carcinoma with age, sex, site and habits.

OBSERVATIONS AND RESULTS

The present study was undertaken to find out the correlation of clinical pattern of oral Squamous cell carcinomas with factors like age, sex, site and habits. The study included a total of 102 patients of oral Squamous cell carcinoma.

Table 1: It shows the distribution of patients as per age. There were no cases recorded below 30 years of ago. In males, maximum cases 42.1% (27) were recorded in the age group of 50-60 years whereas in females maximum cases 34.2% (13) were recorded in age group of more than 60 years.

Distribution of Patients as per Age

Age Range	Males	Females	Total
30-40 years	2 (3.1%)	5 (13.2%)	7
40-50 years	15 (23.4%)	11 (28.9%)	26
50-60	27 (42.1%)	9 (23.7%)	36
>60 years	20 (31.4%)	13 (34.2%)	33
Total	64 (100%)	38 (100%)	102

Table 2: It shows the gender distribution of patients of the study. Out of the total 102 patients studied, 62.7% (64) were males and 37.3% (38) were females.

The male :female ratio was calculated to be 1.7:1.

Distribution of Patients as per Gender

Males	64(62.7%)
Females	38(37.3%)
Total	102 (100%)

Table 3: It shows the lymph node involvement among the patients of the study. 58.8% (60 patients) had lymph node involvement as compared to 41.2% (42 patients) in whom lymph nodes were not involved.

Lymph Node Involvement among patients

Present	60 (58.8%)
Absent	42(41.2%)
Total	102

Table 4: It shows the distribution of patients according to the site and occurrence of oral Squamous cell carcinoma. Among males buccal mucosa 35.9% (23 cases) was the most common site involved followed by alveolar bone 17.2% (11 cases) tongue 12.5% (8 cases), floor of mouth 9.4% (6 cases), hard palate 4.7% (3 cases) and retromolar trigone 4.7% (3 cases) and finally commissure 3.1% (2 cases). Whereas in females alveolar bone 36.9% (14 cases) was the site of predilection, followed by buccal mucosa 34.2% (13 cases), tongue 10.5% (4 cases) and commissure 10.5% (4 cases), oropharynx 5.3% (2 cases) and hard palate 2.6% (1 case). There were no cases of floor of mouth

and retromolar trigone in females.

Distribution of patients according to the site of occurrence of Squamous cell carcinoma

Site	Males	Females	Total
Buccal Mucosa	23 (35.9%)	13 (34.2%)	36
Alveolar Bone	11 (17.2%)	14 (36.9%)	25
Tongue	8 (12.5%)	4 (10.5%)	12
Floor of Mouth	6 (9.4%)	-	6
Hard Palate	3 (4.7%)	1 (2.6%)	4
Commissure	2 (3.1%)	4 (10.5%)	6
Retromolar trigone	3 (4.7%)	-	3
Oropharyx	8 (12.5%)	2 (5.3%)	10
Total	64 100%	38 100%	102

Tables 5: It shows the distribution of patients as regards to the habits they

indulged in. It was seen that quid chewing 51% (52 cases) was the most prevalent habit among both males and females. Among the male habiters, quid chewing habit 28.15 (18 cases) was followed by smoking tobacco with alcohol 17.2% (11 cases,), Quid chewing with smoking tobacco 15.6% (10cases), smoking tobacco only 12.5% (8 cases) and quidchewing with smoking tobacco and alcohol 12.5% (8 cases). However in females the habit of Quid chewing 89.5% (34 cases) was followed by chewing tobacco 2.6% (1 case) and finally chewing tobacco with alcohol 2.6% (1 case). In both the sexes, there was no case with a habit of alcohol use alone.

Distribution of patients as per habits

Habit	Males	Females	Total
Quid only	18 (28.1%)	34 (89.5%)	52
Smoking only	8 (12.5%)	-	8
Chewing tobacco only	1 (1.6%)	2 (5.3%)	3
Quid + Smoking	10 (15.6%)	-	10
Quid +Chewing tobacco	-	1 (2.6%)	1
Quid + Alcohol	4 (6.2%)	-	4

Smoking + Alcohol	11 (17.2%)	-	11
Chewing tobacco + Alcohol	-	1 (2.6%)	1
Smoking + Chewing tobacco	1 (2.6%)	-	1
Quid + Smoking + Alcohol	8 (12.5%)	-	8
Smoking + Chewing tobacco + Alcohol	3 (4.7%)	-	3
Total	64 100%	38 100%	102

Table 6: It represents the correlation of age with the clinical pattern of oral Squamous cell carcinoma. It is seen that ulcerative pattern 57.6% (19 cases) is prevalent in the age range of more than 60 years, whereas papillary 16.7% (6 cases) is common in age range of 50-60 years. Papillary with infiltration occurs equally in age range of 50-60 years and more than 60 years, each 4 cases. Whereas ulcerative with infiltration lesions tend to cumulate in age range of 50-60 years, 33.3% (12 cases). Statistical analysis showed that the chi square value for table was 8.381 with p value being 0.496, as the p value was more than 0.05 the null hypothesis was accepted that there is no statistically significant correlation between these clinical patterns of oral Squamous cell carcinoma and age.

Correlation of age with clinical pattern of oral Squamous cell carcinoma

TYPE

Age	Papillary	Ulcerative	Papillary infiltrative	Ulcerative infiltrative	Total
30-40	1 (14.3%)	4 (57.1%)	-	2(28.6%)	7 (100%)
40-50	5 (19.2%)	17 (65.45)	1 (3.8%)	3 (11.5%)	26 (100%)
50-60	6 (16.7%)	14 (38.9%)	4 (11.1%)	12 (33.3%)	36 (100%)
>60	4 (12.1%)	19 (57.6%)	4 (12.1%)	6 (18.2%)	33 (100%)
Total	16 (15.7%)	54 (52.9%)	9 (8.8%)	23 (22.5%)	102 (100%)

$X^2 = 8.381$, P = 0.496 NS

Table 7: It shows the correlation of the gender with clinical pattern of oral Squamous cell carcinoma. Ulcerative pattern 46.9% (30 cases) was more common in males followed by ulcerative with infiltration pattern 26.6% (17 cases), papillary pattern 15.6% (10 cases) and papillary with infiltration pattern 10.9% (7 cases). In females also, this pattern of presentation was followed ie. Ulcerative 63.2% (24 cases) followed by ulcerative with infiltration 15.8% (6 cases) and papillary 15.8% (6 cases) and finally papillary with infiltration 5.3% (2 cases). The chi-square value calculated for the table was 3.292 with p

value being 0.349. As the p value was more than 0.05, null hypothesis was accepted that there is no statistically significant correlation between these clinical patterns of oral Squamous cell carcinoma and gender.

Correlation of gender with clinical pattern of oral Squamous cell Carcinoma

TYPE

Gender	**Papillary**	**Ulcerative**	**Papillary infiltrative**	**Ulcerative infiltrative**	**Total**
Male	10 (15.6%)	30 (46.9%)	7 (10.9%)	17 (26.6%)	64 (100%)
Female	6 (15.8%)	24 (63.2%)	2 (5.3%)	6 (15.8%)	38 (100%)
Total	16 (15.7%)	54 (52.9%)	9 (8.8%)	23 (22.5%)	102 (100%)

X^2 =3.292, P = 0.349 NS

Table 8: It represents the correlation between the site of occurrence of oral Squamous cell carcinoma and the clinical patterns. It was found that ulcerative pattern was most prevalent in buccal mucosa 58.3% (21 cases.). Whereas in cases of alveolar bone, papillary patterns 32.0% (8 cases) was most common.

In cases of tongue 75% (9 cases), floor mouth 50.0% (3 cases), commisure 100.0% (6 cases) and oropharyx 80.0% (8 cases) ulcerative pattern

was most common. Sites like buccal mucosa (7 cases) and alveolar bone (7 cases) showed equal number of ulcerative with infiltration lesions. Whereas 11.1% (4 cases) of buccal mucosa cancers had papillary with infiltration pattern as compared to 12.0% (3 cases) in alveolar bone. The statistical analysis was done and chi-square value was calculated using Yates correction for continuity. The chi-square value was 37.761 with p value being 0.014. As the p value was less than 0.05, null hypothesis was rejected. Thus it is concluded that there is statistically significant correlation among the clinical pattern of oral Squamous cell carcinoma and site of occurrence.

Correlation of site with clinical pattern of oral Squamous cell carcinoma

Sites	Papillary	Ulcerative	Papillary infiltrative	Ulcerative infiltrative	Total
Buccal Mucosa	4 (11.1%)	21 (58.3%)	4 (11.1%)	7 (19.4%)	36 (100%)
Alveolar Bone	8 (32.0%)	7 (28.0%)	3 (12.0%)	7 (28.0%)	25 (100%)
Tongue	1 (8.3%)	9 (75.0%)	-	2 (16.7%)	12 (100%)
Floor of Mouth	1 16.7%)	3 (50.0%)	-	2 (33.3%)	6 (100%)
Hard Palate	-	-	2 (50.0%)	2 (50.0%)	4 (100%)
Commissure	-	6 (100%)	-	-	6 (100%)
Retromolar trigone	1 (33.3%)	-	-	2 (66.7%)	3 (100%)
Oropharynx	1 (10.0)	8 (80.0%)	-	1 (10.0%)	10 (100%)
Total	16 (15.7%)	54 (52.9%)	9 (8.8%)	23 (22.5%)	102 (100%)

$X^2 = 37.761$, $P = 0.014$ SIG

Table 9: It shows the distribution of infiltrative lesions as regards to the site. Infiltrative lesions include the ulcerative with infiltration and papillary with infiltration pattern. Out of the total cases (102) about 31.4% (32 cases) had evidence of infiltration. Infiltration was seen maximum in cases of buccal mucosa 34.4% (11 cases) followed by alveolar bone 31.2% (10 cases), hard palate 12.5% (4 cases), tongue, floor of mouth, retromolar trigone 6.3% each (2 cases). When each site was analyzed individually, it was found that about 40% (10 cases out of 25) of alveolar bone cancers and 100% of hard palate cancers (4 out of 4) infiltrated into bone, whereas only 30.5% (11 out of 36) of buccal mucosa cancer infiltrated the bone.

Distribution of Infiltrative* lesion as regard to site

Location	Total cases	Cases with infiltration into bone
Buccal Mucosa	36	11(34.4%)
Alveloar Bone	25	10 (31.2%)
Tongue	12	2(6.3%)
Floor of Mouth	6	2(6.3%)
Hard Palate	4	4(12.5%)
Commissure	6	- -
Retro molar trigone	3	2 (6.3%)
Oro-pharynx	10	1 (3.1%)
Total	102	32 (100%)

*Infiltrative lesions include ulcerative with infiltration and papillary with infiltration lesions.

Table 10: It shows the correlation of habits with clinical patterns of oral Squamous cell carcinoma. It was observed that in patients who indulged in the habit of chewing quid only, most common pattern was ulcerative 51.9% (27 cases) followed by ulcerative with infiltration 25.0% (13 cases), papillary 17.3% (9 cases) and finally papillary with infiltration 5.8% (3 cases). Patients who had a habit of chewing tobacco only, quid chewing with smoking, quid chewing with tobacco chewing, quid with alcohol, chewing tobacco with alcohol, quid chewing with smoking and alcohol presented with no papillary pattern of oral Squamous cell carcinoma; whereas ulcerative pattern was not seen in patients who had a habit of chewing tobacco with alcohol and smoking tobacco with chewing tobacco. The statistical analysis was done and chi-square value was calculated after Yates correction of continuity. The chi square value was found to be 16.524 with p value being 0.348. As the p value was more than 0.05 the null hypothesis was accepted stating that there is no statistically significant correlation between clinical pattern of oral Squamous cell carcinoma and habits.

Correlation of Habits with clinical patterns of oral Squamous cell carcinoma

Habit	Papillary	Ulcerative	Papillary Infiltrative	Ulcerative Infiltrative	Total
Quid only	9 (17.3%)	27 (51.9%)	3 (5.8%)	13(25.0%)	52(100%)
Smoking only	2 (25.0%)	4 (50.0%)	1 (12.5%)	1 (12.5%)	8 (100%)
Chewing tobacco only	-	2(66.7%)	1 (33.3%)	-	3 (100%)
Quid + Smoking	-	4 (40.0%)	3 (30.0%)	3 (30.0%)	10 (100%)
Quid + Chewing tobacco	-	1 (100%)	-	-	1 (100%)
Quid + Alcohol	-	3 (75.0%)	-	1 (25.0%)	4 (100%)
Smoking + Alcohol	3 (27.3%)	5 (45.5%)	-	3 (27.3%)	11 (100%)
Chewing tobacco + Alcohol	-	-	-	1(100%)	1(100%)
Smoking + Chewing tobacco	1 (100%)	-	-	-	1 (100%)
Quid + Smoking + Alcohol	-	7 (87.5%)	1 (12.5%)	-	8 (100%)
Smoking +	1	1	-	1	3

Chewing tobacco + Alcohol	(33.3%)	(33.3%)		(33.3%)	(100%)
Total	16 (15.7%)	54 (52.9%)	9 (8.8%)	23 (22.5%)	102 (100%)

$X^2 = 16.524$, P = 0.348 NS

Table 11: It represents the correlation of lymph node involvement with clinical patterns of oral Squamous cell carcinoma. Of the 60 cases, in which lymph node involvement was present; maximum had the clinical pattern of ulceration (30 cases) followed by ulcerative with infiltration (17 cases), papillary (8 cases) and finally papillary with infiltration (5 cases). The chi- square value was calculated to be 3.148 with p value being more than 0.05. Thus null hypothesis was accepted stating that there is not statistically significant correlation between lymph node involvement and the clinical patterns of oral Squamous cell carcinoma.

Correlation of Lymph node involvement with clinical pattern of Oral Squamous cell carcinoma

Lymph Node Involvement	Papillary	Ulcerative	Papillary infiltrative	Ulcerative infiltrative	Total
Present	8 (50.0%)	30 (55.6%)	5 (55.6%)	17 (73.9%)	60
Absent	8 (50.0%)	24 (44.4%)	4 (44.4%)	6 (26.1%)	42
Total	16 (100%)	54 (100%)	9 (100%)	23 (100%)	102

$X^2 = 3.148$, $P > 0.05$ NS

DISCUSSION

The present study was done to find out the correlation of clinical patterns of Squamous cell carcinoma with factors like age, sex, site and habits. The study was conducted on 102 patients who were diagnosed with oral Squamous cell carcinoma.

On the basis of the data available from the present study, it appears that the maximum cases of oral Squamous cell carcinoma, in both males and females occur in the age range of 50-60 years (Table 1). The lack of significant habits among the younger age group could possibly be the reason for lower incidence of oral Squamous cell carcinoma among younger patients.

Buccal mucosa (36 patients) was the most common site affected by oral Squamous cell carcinoma in both males and females (Table 4). The high prevalence of cancer of buccal mucosa may be accounted for by the fact that the betel quid is habitually compressed against it providing direct access for carcinogens from the quid. Tobacco is thought to be the principal source of carcinogen in pan, but other constituents (such as lime) may also have carcinogenic potential. The greater susceptibility of buccal mucosa to cancer in cases of tobacco users leads one to think of the possibility of this mucous membrane being more vulnerable to the possible carcinogenic effect of tobacco,

pure or mixed with other ingredients. In chewers, it is understandable that this may be due to its maximum contact with raw tobacco and its other ingredients. The other possible explanation could be that when tobacco is smoked or chewed, its noxious agents get dissolved in saliva. Normally, some saliva remains constantly in the vestibule of the mouth, and may facilitate greater and prolonged contact of tobacco with buccal mucosa. In the present study, the habit of quid chewing 51% (52 patients) was found to be the most common. Other researchers also found that the habit of quid chewing was more prevalent in oral Squamous cell carcinoma cases. The risk of Squamous cell carcinoma developing in oral cavity is increased by combining habits of alcohol drinking, tobacco smoking and paan use.

When the age was correlated with the clinical patterns of oral Squamous cell carcinoma, it was found that among all age groups, ulcerative pattern was most common 52.9% (54 cases.) Papillary pattern of oral Squamous cell carcinoma was more common in the age group of 50-60 years, similar findings were suggested by **IShiyama et al** that infiltrative lesions (papillary with infiltration and ulcerative with infiltration) tend to occur more in the age group of 50-60 years (Table – 60). Ulcerative with infiltration pattern is more prevalent than papillary with infiltration pattern. Also, as the age increases (more than 60 years), ulcerative pattern appears to be the dominant type 57.6%

(19 cases) of all the clinical patterns presented. According to **Wahi et al** most tumors of the oral cavity ulcerate, this could be due to the friction of the mucous membrane during eating.

In the present study also the ulcerative pattern was the most common type amongst both males and females (Table 7). Papillary pattern did not show much difference among females 15.8% (6 cases) and males 15.6% (10 cases). This is supported by **Ishiyama et al.** However the infiltrative lesions (papillary with infiltration and ulcerative with infiltration) was seen to be more common in males 37.5% (24 cases) than females 21.1% (8 cases).

It was found from the present study that ulcerative pattern was the common presentation of buccal mucosa cancer 58.3% (21 cases) whereas for the papillary pattern alveolar bone 32.0% (8 cases) was the most prevalent site followed by buccal mucosa 11.1% (4 cases), floor of mouth 16.7% (1 case) tongue 8.3% (1 case), retromolar trigone 33.3% (1 case). These findings are consistent with **ishiyama et al.** infiltration into bone was common in cases of oral Squamous cell carcinoma occurring on the alveolar bone 40% (10 cases). This could be explained on the basis of proximity of bone to the tumor. Similar findings were inferred by **Bahadur**. There is statistically significant correlation between site of occurrence and clinical pattern of oral Squamous cell carcinoma and thus it can be concluded from the present study that lesions of buccal

mucosa generally ulcerate and alveolar bone show papillary pattern.

It was seen that the habit of quid chewing was most prevalent among patients of present study and was associated with all clinical patterns. However ulcerative lesions were the most common presentation of the group, irrespective of the habit the patients indulged in. Usage of quid was associated with more infiltrative lesions (16 cases) than with the combination habit of quid and smoking (6 cases). Alcohol use alone was not seen among any of the patients; alcohol and tobacco act in synergy and augment each others ill effects.

The correlation of lymph node involvement with clinical pattern was analysed. It was found that ulcerative lesions had a increased tendency for lymph node involvement 50% (30cases), followed by the ulcerative with infiltration pattern 28.3% (17 cases). Papillary pattern 13.3% (8cases) had less tendency to involve lymph nodes. These results are consistent with the observations of **Jacobson and Martenson** who suggested that ulcerating form produces early metastases than papillary form. The observation that nodal disease was not a common finding in papillary Squamous neoplasms, is documented by **Ishiyama et al.** These observations can help the clinician in determining the prognosis of the disease and thereby ulcerative lesions should be treated more aggressively and promptly.

Thus, we can come to a conclusion that the there is no statistically

significant correlation between clinical patterns of oral Squamous cell carcinoma and age, sex and habits but there is statistically significant correlation of the clinical pattern with the site. However further studies are needed to substantiate this fact. The limitation of the present study was a small sample size of 102 patients over a limited time span. Further studies with a large sample size (more than 1000 cases) could be providing more useful information of these correlations.

SUMMARY AND CONCLUSION

The present study was undertaken on 102 patients who were diagnosed with oral Squamous cell carcinoma. The clinical pattern of oral Squamous cell carcinoma was studied. The study was conducted to find out the correlation between the clinical pattern of Squamous cell carcinoma with age, sex, site and habits.

The following conclusion can be drawn from the present study:

1. There is no statistically significant correlation between the clinical patterns of oral Squamous cell carcinoma with age, sex and habits. However in the present study ulcerative pattern was the most common in males 46.9% (30 cases), in the age group above 60 years 57.6% (19 cases) with the habit of quid chewing 51.9% (27 cases).

2. There is statistically significant correlation between the clinical patterns of oral Squamous cell carcinoma with site. Buccal mucosa (36 cases) was the most common site affected with clinical presentation of ulceration 58.3% (21 cases)
3. It is suggested that further studies should be undertaken involving a large sample size to refuse or accept the above conclusions from the present study.

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CLINICAL PATTERNS OF ORAL SQUAMOUS CELL CARCINOMA

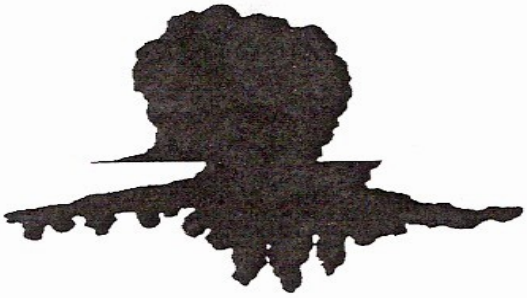

Fig. 1. PAPILLARY

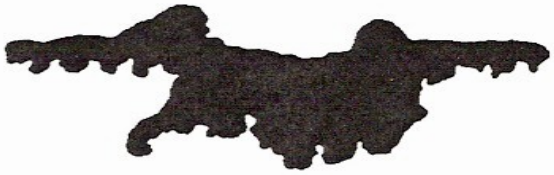

Fig. 2. ULCERATIVE

Fig. 3. DEEPLY INFILTRATIVE

PROFORMA

1. Name	**:**	Name of the patient was recorded.
2. Age	**:**	Patients above 35 years of age were included and the age recorded.
3. Sex	**:**	Gender of patient was recorded.
4. Occupation	**:**	Occupation of the patient was recorded
5. Address	**:**	Address of the patient was recorded
6. Diet	**:**	Veg / Mixed.

7. Habits:

Type	**Duration**	**Frequency**
a. smoking tobacco		
b. Chewing tobacco		
c. Alcohol		
d. Quid chewing		

CLINICAL EXAMINATION:

Examination was carried under good light conditions with mouth mirrors and tongue depressors) (to check base of tongue) by a single examiner to reduce inter examiner variability.

SITE:

Oral cavity was divided into following areas:-

a. Buccal mucosa	(Right and left)
b. Alveolar ridge	(upper and lower)
c. Tongue	(Anterior 2/3rd of tongue)
d. Floor of mouth	
e. Hard palate	
f. Commissures	(Right and left)
g. Retromolar trigone.	
h. Oropharynx	it includes – base of tongue.
	- Soft palate.

These sites were examined for any clinically suspicious malignancies depending on their clinical presentations and grouped broadly as:

a. Ulcerative
b. Papillary
c. Deeply Infiltrative

INVESTIGATIONS:

a. **Biopsy:** Biopsy was done to confirm the clinically suspicious lesions for malignancy.
b. **Radiographic evaluation:** Using intra oral or extra oral radiographs,

signs of bony involvement were assessed.

Analysis: The present study consisted of 102 patients diagnosed with oral Squamous cell carcinoma. Subjects were selected on the basis of inclusion and exclusion criteria. The data available from the study was tabulated into tables and analyzed statistically to assess the correlation between patterns of oral Squamous cell carcinoma with age, sex, site and habits.